

# **St. Louis Ozone/PM25 Control Strategies Meeting**

**November 19, 2004**

**East-West Gateway Office**

- Air Quality  
Overview /Background
- Workgroup Responsibilities
- Steps for SIP Development
- Missouri Inventory
- Potential Control Strategies

# **Air Quality Overview/Background**

# **Phase 1, 8-Hour Implementation Rule**

- Rule Signed on April 15, 2004
- St. Louis Classified as “Moderate”

# **Current 8-hour Ozone Status for the St. Louis Area**

**Limiting Monitor: Orchard Farm, MO**

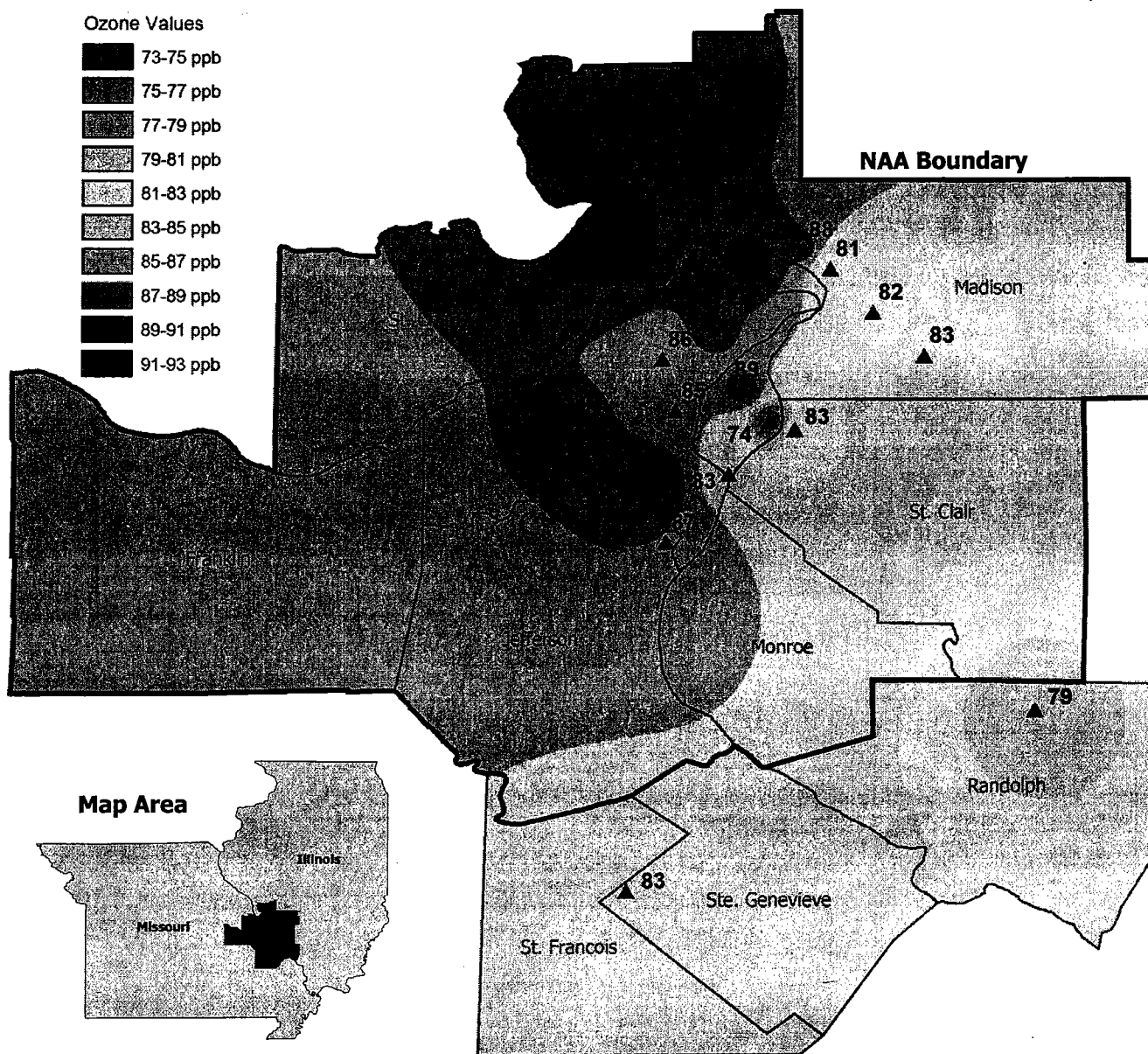
## **Top Four Values by Year**

<b>Rank</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004*</b>
1 <sup>st</sup> High	90 ppb	114 ppb	97 ppb	80 ppb
2 <sup>nd</sup> High	90 ppb	111 ppb	96 ppb	80 ppb
3 <sup>rd</sup> High	89 ppb	101 ppb	95 ppb	78 ppb
4 <sup>th</sup> High	<b>88 ppb</b>	<b>98 ppb</b>	<b>90 ppb</b>	<b>76 ppb</b>

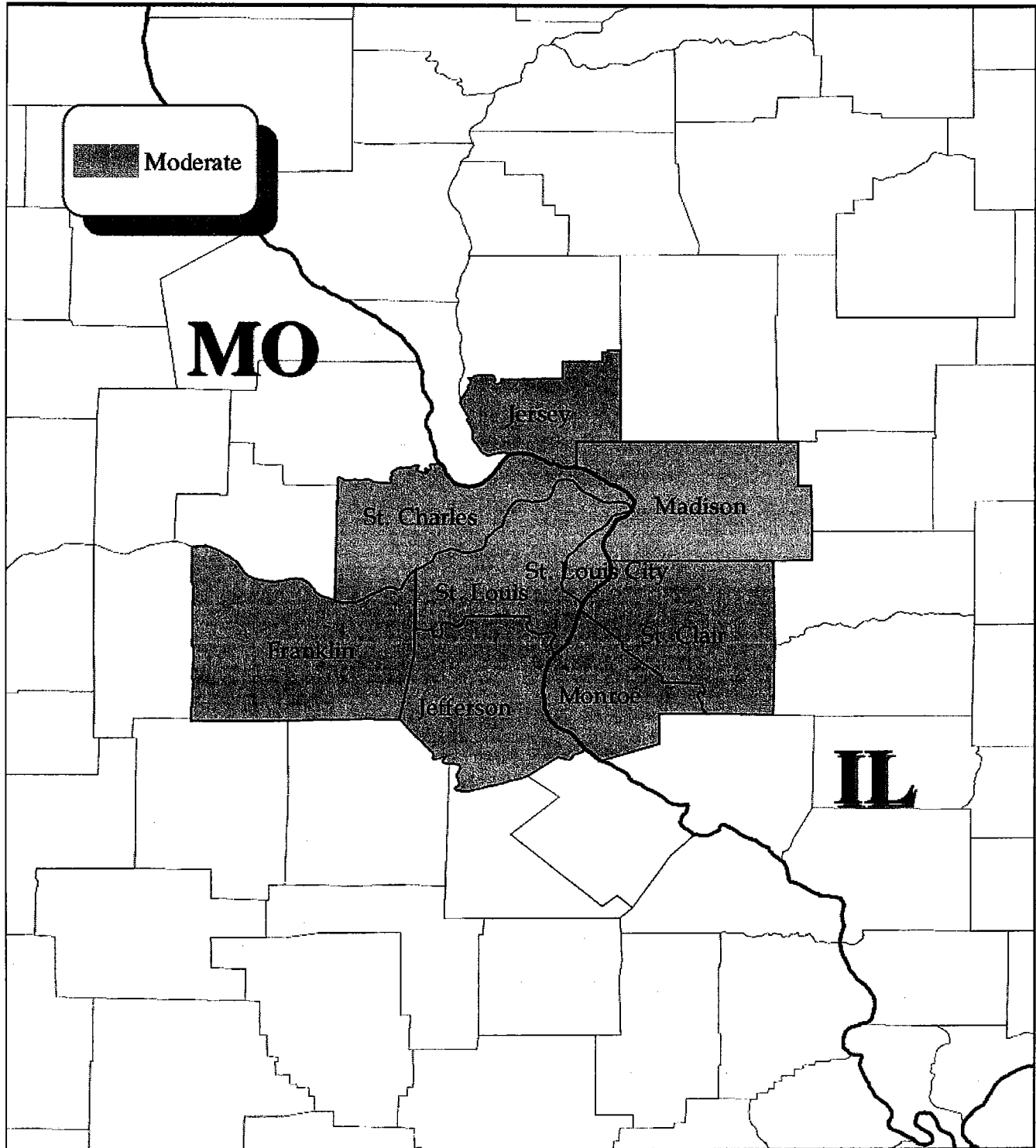
## **Design Value**

<b>2001-2003</b>	<b>2002-2004*</b>
<b>92 ppb</b>	<b>88 ppb</b>

# St. Louis Region 2001-2003 8-hour Ozone Design Values

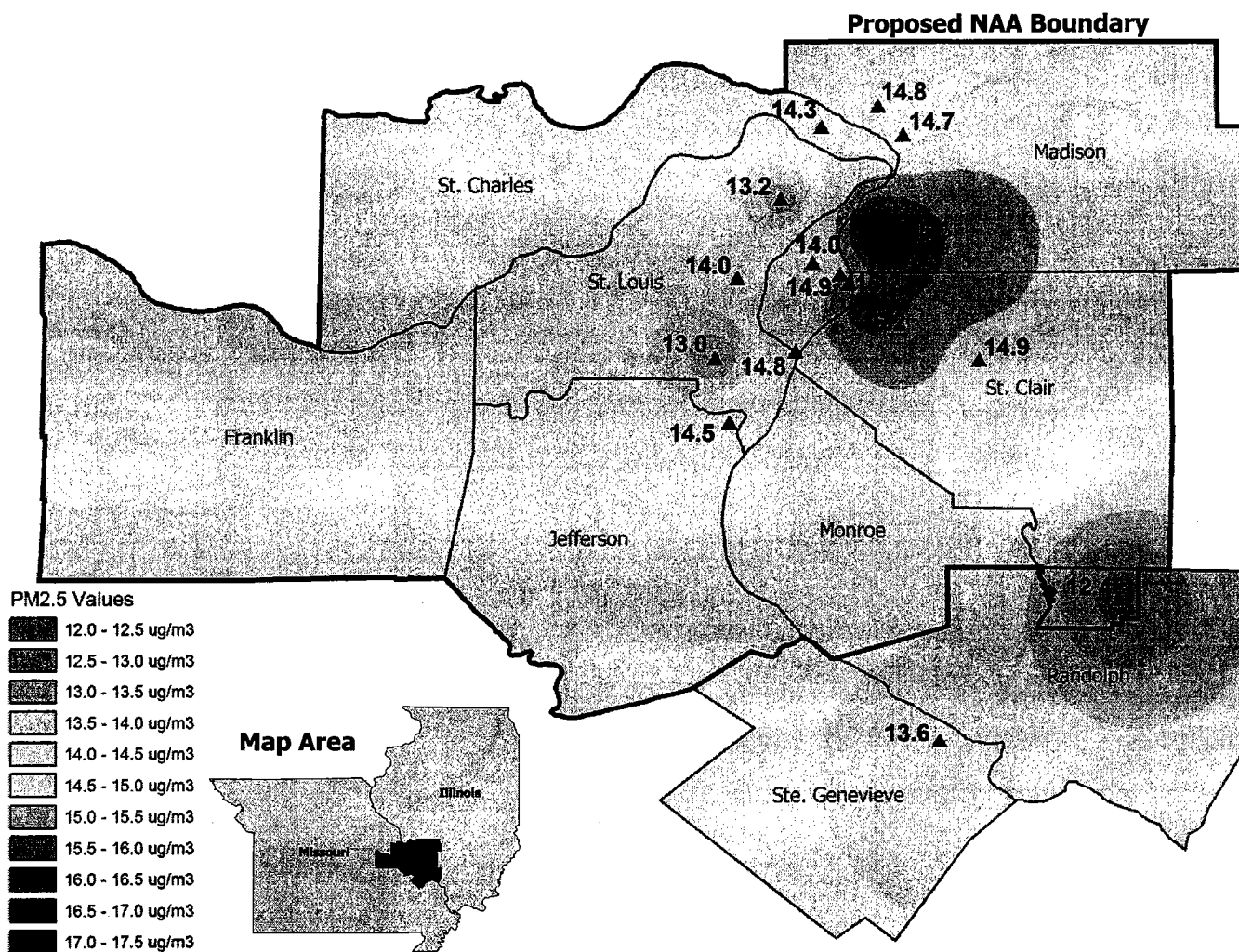


# 8-Hour Ozone Nonattainment Area St. Louis, MO-IL

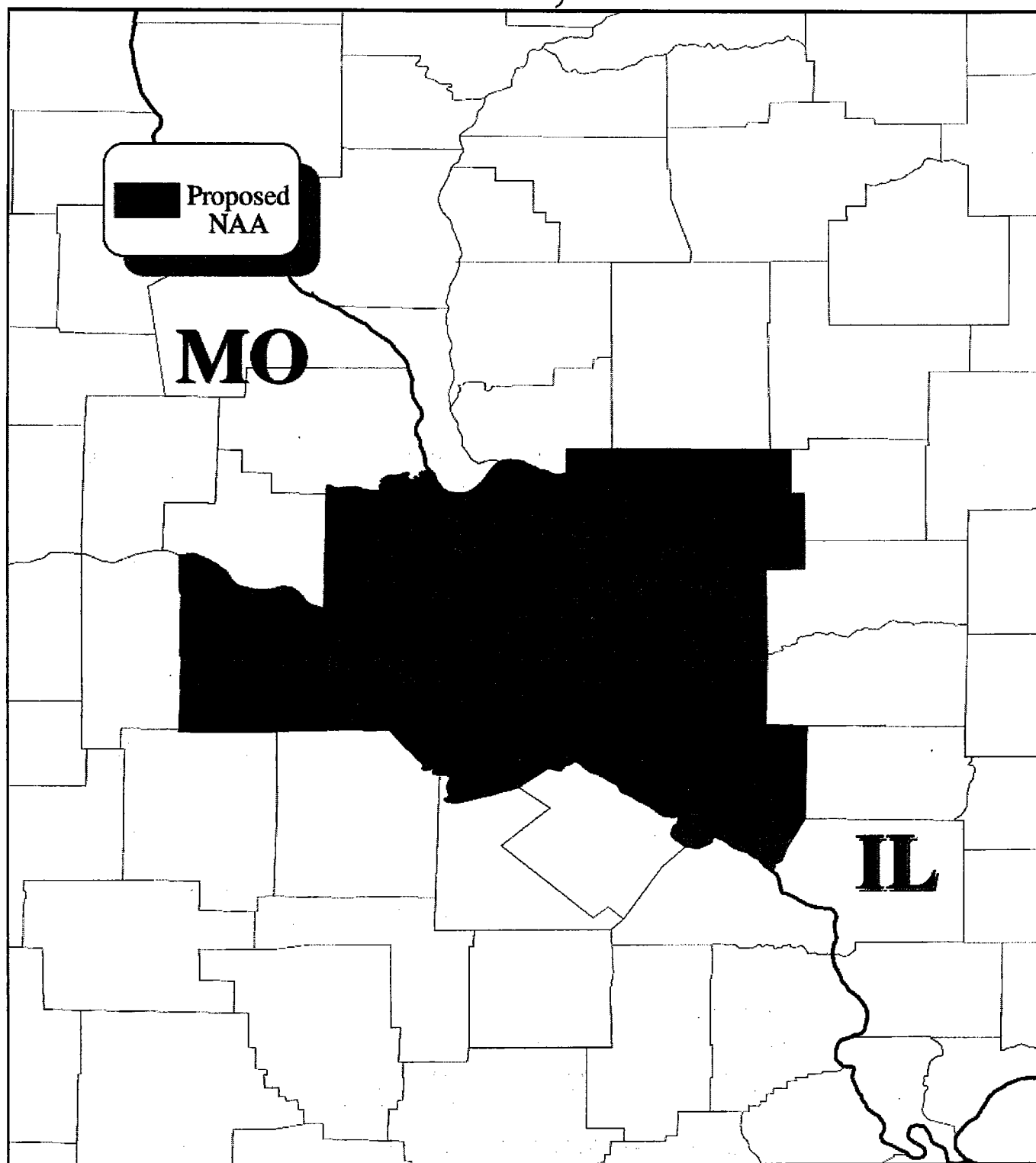


Source: USEPA, Office of Air Quality Planning and Standards, Green Book, August 03, 2004

# St. Louis Region 2001-2003 Annual PM2.5 Design Values



# Proposed PM<sub>2.5</sub> Nonattainment Area St. Louis, MO-IL



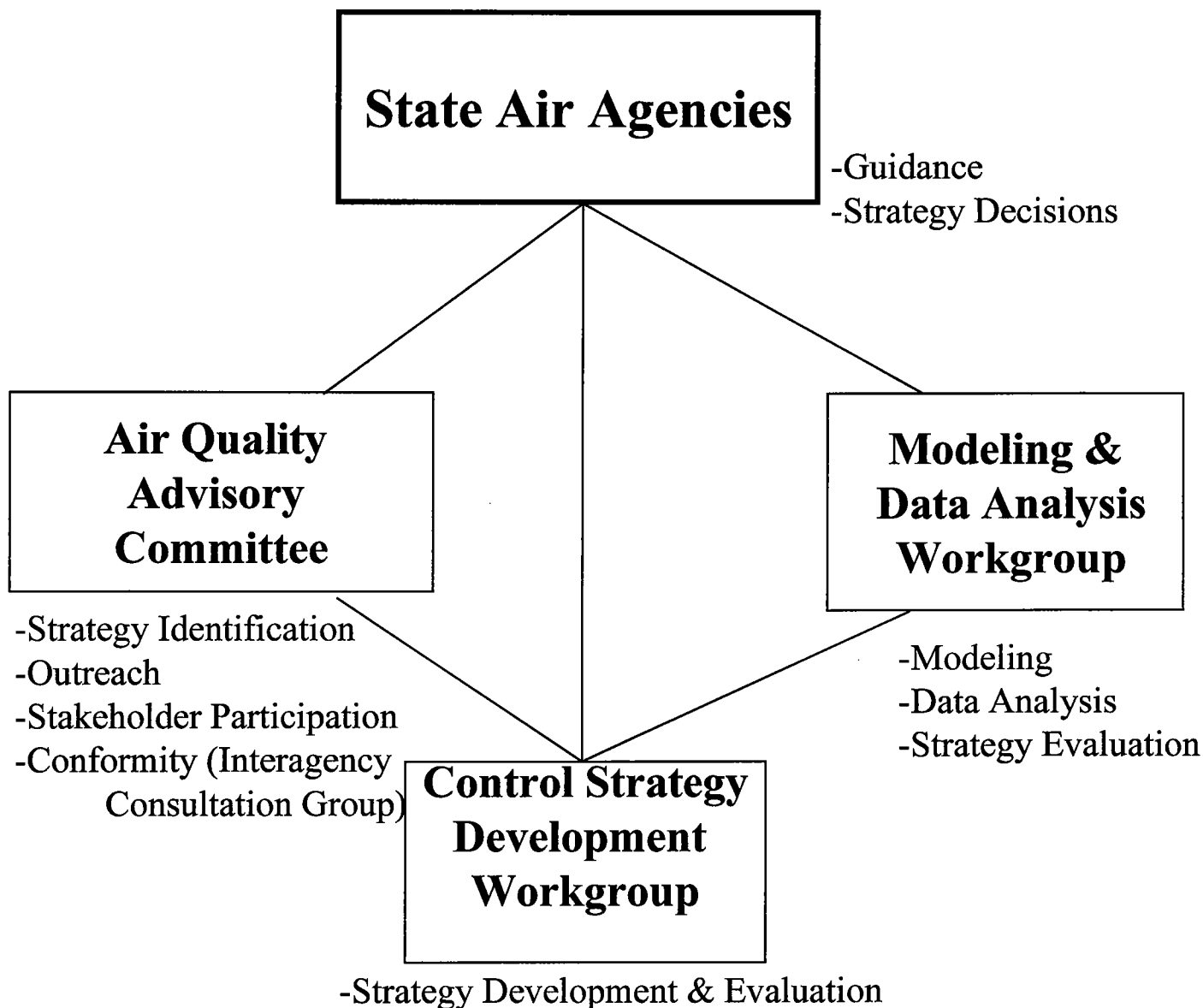
\* September 1, 2004, IEPA recommended only Baldwin Township in Randolph County as NAA  
Source: USEPA, Office of Air Quality Planning and Standards, July 8, 2004



# **Discussion/Questions**

# **Workgroup Responsibilities**

# Organizational Chart



# **Control Strategy Development Workgroup:**

## **Responsible for...**

- Identification and technical evaluation of control strategies needed to demonstrate attainment and meet other regulatory requirements
- Preparation of emissions inventories, tracking of control requirements required by the Clean Air Act, identification of other control measures, and evaluation of feasibility and costs
- Coordination and communication of strategies and technical information to AQAC, the Modeling and Data Analysis Workgroup, and the State Agency Air Directors

# **Air Quality Advisory Committee (AQAC)**

## **Responsible for ...**

- Providing a forum for communication and outreach between local governmental agencies, stakeholders, the Modeling and Data Analysis Workgroup, Control Strategy Development Workgroup, and the State Agency Air Directors
- Identifying control strategy options for evaluation by the Control Strategy Development Workgroup
- Developing conformity budgets
- Preparing conformity demonstrations that are consistent with the 8-hour ozone and PM<sub>2.5</sub> SIPs.

# **Control Strategy Development Workgroup Participants**

- Illinois EPA
- Missouri DNR
- U.S. EPA Region V
- U.S. EPA Region VII
- East-West Gateway

Local organizations, stakeholders, and academics that can contribute technical capabilities or resources are also invited to participate.

# **Discussion/Questions**

# Steps for SIP Development



# **SIP Schedule**

## **Timeline...**

- Final Area Designation : Ozone in 2004 and PM2.5 in 2005
- Control Strategy Evaluation : 2004- 2005
- Technical Evaluation (Emission Inventory, Model Performance Evaluation, Control Strategy Modeling): Today - 2006
- SIP Submittals: 2007
- Attainment Dates : 2010

# **Components of the SIP**

- **Attainment Demonstration Modeling**
- **Reasonable Further Progress (RFP)**
- **Reasonable Available Control Technology (RACT)**
- **New Source Review (NSR)**
- **Conformity**

# **SIP Development Approach**

- Hold Stakeholder Meetings
- Perform Emission Inventory
- Define Potential List of Control Strategies for Both Ozone and PM<sub>2.5</sub>
- Evaluate Emission Reduction and Cost Effectiveness for selected control strategies

## **Cont.**

- Provide Control Strategies to Modeling Workgroup for Evaluation.
- Coordinate and Communicate of Strategies and Technical Information to AQAC.
- Develop and Adopt SIPs, Including Emission Control Programs/Rules, Milestones and Deadlines.

# **Discussion/Questions**

# **Missouri Emission Inventory**

# **Emission Inventory**

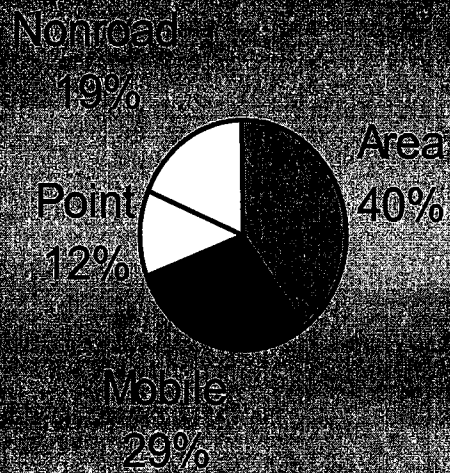
- Base year inventory: 2002
- Pollutants: VOC, NO<sub>x</sub>, PM<sub>2.5</sub> precursors ( SO<sub>x</sub>, NO<sub>x</sub>, Fine particulate, etc)
- Type of inventory- Point, area, Nonroad, mobile
- Tools: Transportation Data, Demographic data, Mobile 6, non-road models, etc.

**Preliminary 2002 Emissions for the  
Missouri Portion of the St. Louis  
Nonattainment Area (tons/year)**

<b>Category/Pollutant</b>	<b>VOC</b>	<b>NOx</b>	<b>PM2.5</b>
<b>Area</b>	<b>34987</b>	<b>10014</b>	<b>23624</b>
<b>Mobile</b>	<b>25273</b>	<b>62375</b>	<b>1085</b>
<b>Point</b>	<b>10829</b>	<b>43878</b>	<b>10988</b>
<b>Nonroad</b>	<b>16212</b>	<b>20021</b>	<b>1302</b>
<b>Total</b>	<b>87301</b>	<b>136288</b>	<b>36999</b>



# Preliminary 2002 VOC Emissions for the Missouri Portion of the St. Louis NAA

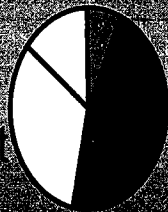


- Area
- Mobile
- Point
- Nonroad

# Preliminary 2002 NO<sub>x</sub> Emissions for the Missouri Portion of the St. Louis NAA

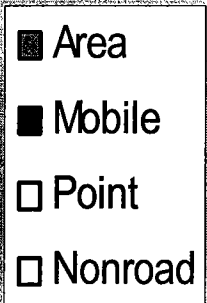
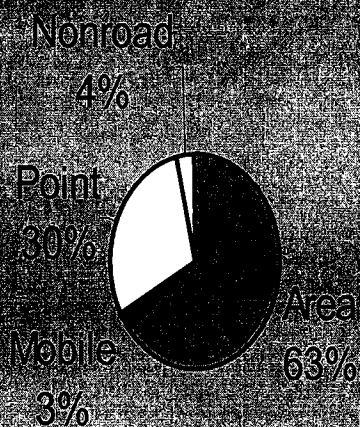
Nonroad 15% Area 7%

Point 32% Mobile 46%



- Area
- Mobile
- Point
- Nonroad

# Preliminary 2002 PM2.5 emissions for the Missouri Portion of St. Louis NAA



# **Discussion/Questions**

# **Potential List of Control Strategies**

# **Emission Reduction Strategies**

- Short List of Control Strategies
- Economically and Technologically Feasible
- Implement As Soon As Practical But not Later Than 2009
- Reduction Must be Quantifiable, Permanent, Enforceable.

	Source of	Reduction in Emissions of Volatile Organic			Detail for Pre-2010 Actions		PM2.5
	additional	Compounds and/or Nitrogen Oxides that React			EMISSIONS	COST	emissions
COMBUSTION	information	in Sunlight to form Ground Level Ozone			reductions in	estimated as	reduced
		ATTAINMENT	MAINTENANCE	LONG TERM	pounds per	dollars per ton	Please
Detail sheets are attached.		before 2010	2010-2020	after 2020	summer day	of reduction	see footnote*
<b>STATE AND LOCAL ACTIONS ALREADY IN PLACE</b>							
Permitting and control of	MDNR/KDHE						
major industrial sources	KCMO/KCK	already counted					
Existing State RACT rules	MDNR/KDHE						
for specific industries		already counted					
Reporting of emissions from	MDNR/KDHE						
sources above 40 tons/year							
<b>FEDERAL ACTIONS</b>							
Interstate Air Quality Rule	EPA						
	MDNR/KDHE						
MACT rules for hazardous	EPA						
air pollutants	MDNR/KDHE	already counted?					
New Source Review off-sets	EPA	uncertain	not required for				
for non-attainment areas		impact	maintenance				
<b>POTENTIAL NEW ACTIONS</b>							
Regulate emergency generator	KCMO/KCK						
use for non-emergency power		yes	yes				
Restrict use of lighter fluids and	Jo Co						
switch to charcoal chimneys		yes	yes				
Prohibit residential open burnin	MDNR/KDHE						
and construction debris burns	MARC	yes	yes				
Lower RACT applicability	MDNR						
limits		yes	yes				
Establish RACT for new	KDHE						
source categories		yes	yes				
Control major NOx sources	KDHE/MDNR						
in strategic locations		yes	yes				

SOLVENT USERS/ VOC EMITTERS	Source of additional information	Reduction in Emissions of Volatile Organic Compounds and/or Nitrogen Oxides that React in Sunlight to form Ground Level Ozone			Detail for Pre-2010 Actions		PM2.5
		ATTAINMENT before 2010	MAINTENANCE 2010-2020	LONG TERM after 2020	EMISSIONS	COST	emissions
					reductions in pounds per summer day	estimated as dollars per ton of reduction	reduced Please see footnote*
Detail sheets are attached.							
STATE AND LOCAL ACTIONS ALREADY IN PLACE							
Permitting and control of major industrial sources							
Existing State RACT rules for specific industries							
Household hazardous waste programs & education							
<b>FEDERAL ACTIONS</b>							
MACT rules for hazardous air pollutants							
VOC standards for commercial and consumer products							
POTENTIAL NEW ACTIONS							
Partner with retailers to sell low emission products							
Best Practices training tied to business licensing							
Lower RACT applicability limits							
Early MACT/HAP implementation							
Economic incentives for using low-VOC alternatives							
Control Emissions from solvent metal cleaning							



	Source of	Reduction in Emissions of Volatile Organic			Detail for Pre-2010 Actions		PM2.5
FUELS	additional	Compounds and/or Nitrogen Oxides that React			EMISSIONS	COST	emissions
VEHICLE MAINTENANCE	information	in Sunlight to form Ground Level Ozone			reductions in	estimated as	reduced
AND TECHNOLOGY		ATTAINMENT	MAINTENANCE	LONG TERM	pounds per	dollars per ton	Please
Detail sheets are attached.		before 2010	2010-2020	after 2020	summer day	of reduction	see footnote*
<b>STATE AND LOCAL ACTIONS ALREADY IN PLACE</b>							
Stage I Vapor Recovery							
Lower RVP Gasoline							
<i>see note about RFG</i>							
Promotion of alternative fueled							
hybrid vehicles (Clean Cities)							
Missouri safety inspections							
<b>FEDERAL ACTIONS</b>							
Tax credits for electric and							
hybrid electric vehicles							
On-Board Stage II Vapor							
Recovery for newer cars							
Tier 2, gasoline and diesel							
fuel standards							
Tier 2, light & medium duty							
vehicle emissions standards							
Tier 2, heavy duty vehicle							
emissions standards							
<b>POTENTIAL NEW ACTIONS</b>							
Full emissions testing prog							
(I/M 240)							
Stage II Vapor Recovery							
at the gas pump							
Stage II Vapor Recovery							
or w/time-of-day pricing							
Reformulated gasoline (RFG)							
<i>would replace lower RVP</i>							
More aggressive promotion of							
alt fuel vehicles (incl hy-elec.)							
Former gas cap replacement							
could be implemented again							
Require emissions testing							
for vehicle title transfer							
Vehicle repair/replacement for							
low income owners in conj. W/							

ON-ROAD VEHICLE OPERATIONS AND MILES TRAVELED	Source of additional information	Reduction in Emissions of Volatile Organic Compounds and/or Nitrogen Oxides that React in Sunlight to form Ground Level Ozone			Detail for Pre-2010 Actions		PM2.5
					EMISSIONS	COST	emissions
					reductions in	estimated as	reduced
		ATTAINMENT before 2010	MAINTENANCE 2010-2020	LONG TERM after 2020	pounds per summer day	dollars per ton of reduction	Please see footnote*
Detail sheets are attached.							
<b>STATE AND LOCAL ACTIONS ALREADY IN PLACE</b>							
Reduced fare transit on							
Ozone Alert Days							
Operation Green Light, Phase I							
Regional Rideshare carpool matching program							
<b>FEDERAL ACTIONS</b>							
EPA Smart Growth Network							
Any DOT initiatives?							
<b>POTENTIAL NEW ACTIONS</b>							
Double speeding fines on ozone alert days							
Enhanced enforcement of speed limits							
Reduce regional highway speeds to 55 mph							
Reduce regional highway speeds by 5 mph							
Institute surcharges on parking to encourage transit/carpooling							
Promulgate and enforce anti-idling rules							
Install IdleAir Systems for diesel trucks at rest/truck stops							

FLEET OPERATIONS	Source of additional information	Reduction in Emissions of Volatile Organic Compounds and/or Nitrogen Oxides that React in Sunlight to form Ground Level Ozone			Detail for Pre-2010 Actions		PM2.5
Public safety, hauling, shipment and delivery, transit and school buses.		ATTAINMENT	MAINTENANCE	LONG TERM	EMISSIONS	COST	emissions
Detail sheets are attached.		before 2010	2010-2020	after 2020	reductions in pounds per summer day	estimated as dollars per ton of reduction	reduced Please see footnote*
STATE AND LOCAL ACTIONS ALREADY IN PLACE							
State alternative fuel vehicle fleet requirements							
Grant funding for alternative or hybrid vehicles (Clean Cities)							
FEDERAL ACTIONS							
Tier 2, light & medium duty vehicle emissions standards							
Tier 2, gasoline and diesel fuel standards							
Tier 2, heavy duty vehicle emissions standards							
Urban Bus Program and the Clean School Bus Program							
Federal alternative fuel vehicle fleet requirements							
POTENTIAL NEW ACTIONS							
Benchmarks for emissions reductions....							
Convert light duty fleets to alternative fuels/hybrid tech.							
Heavy duty engine retrofit incentive program							
Use of auxiliary controls to lower idling emissions from trains							

SEASONAL HEAVY CONSTRUCTION	Source of additional information	Reduction in Emissions of Volatile Organic Compounds and/or Nitrogen Oxides that React in Sunlight to form Ground Level Ozone			Detail for Pre-2010 Actions		PM2.5 emissions reduced Please see footnote*
		ATTAINMENT before 2010	MAINTENANCE 2010-2020	LONG TERM after 2020	EMISSIONS	COST	
					reductions in pounds per summer day	estimated as dollars per ton of reduction	
Detail sheets are attached.							
STATE AND LOCAL ACTIONS ALREADY IN PLACE							
Contractual requirements for off peak and night work							
Restrictions on open burning of debris							
FEDERAL ACTIONS							
Low sulfur diesel phasing in btwn 2007 and 2010							
Rules for cleaner off-road diesel engines 2008 to 2014							
POTENTIAL NEW ACTIONS							
Contract incentives for early engine retrofits							
Require coordination btwn road work and utility work							
Geographic coordination of construction in the region							
Require low VOC paving and striping materials							

	Source of	Reduction in Emissions of Volatile Organic Compounds and/or Nitrogen Oxides that React in Sunlight to form Ground Level Ozone			Detail for Pre-2010 Actions		PM2.5	WC
	additional information	ATTAINMENT before 2010	MAINTENANCE 2010-2020	LONG TERM after 2020	EMISSIONS reductions in pounds per summer day	COST estimated as dollars per ton of reduction	emissions reduced Please see footnote*	ac appr our Yes
<b>MEASURING ACTIONS ARE IN PROGRESS</b>								
Metro Green Plan for regional green space								
Restrictions on open burning of yard waste								
State right-of-way natural landscaping, less mowing								
<b>FEDERAL ACTIONS</b>								
Phase II emission standards for handheld engines								
Phase II emission standards for small engines								
Marketable emissions for early/late compliance								
<b>POINT SOURCE ACTIONS</b>								
Ban use of gas-powered equipment on alert days								
Laid back lawn care - less water, chemicals, mowing								
Small engine buyback incentive program								
Distribute or subsidize low emission gas cans								
Green purchasing co-op for commercial lawn services								
Time-of-day ban on use of gasoline equipment tied to accelerated replacement								

# Rules in Place

- **Open Burning Restrictions**
- **Control of Emission of Nitrogen Oxides.**
- **Control of Petroleum Liquid Storage, Loading and Transfer**
- **Control of Emissions From Aerospace Manufacturing and Rework Facilities (5/18/2000)**
- **Control of Emissions from Solvent Metal Cleaning (7/11/80)**
- **Liquefied Cutback Asphalt Paving Restricted (7/11/80) )**
- **Control of Emissions from Perchloroethylene Dry Cleaning Installations (4/3/81)**
- **Control of Emissions from Industrial Surface Coating Operations (7/11/80)**
- **Control of Emissions from Rotogravure and Flexographic Printing Facilities (4/3/81)**
- **Control of Emissions from Manufacture of Synthesized Pharmaceutical Products (4/3/81)**
- **Control of Emissions from Polyethylene Bag Sealing Operations (10/15/84)**

# Cont.

- **Control of Emissions from the Application of Deadeners and Adhesives (3/5/90)**
- **Control of Emissions from Manufacture of Paints, Varnishes, Lacquers, Enamels and Other Allied Surface Coating Products (4/16/85)**
- **Control of Emissions from the Manufacture of Polystyrene Resin (3/5/90)**
- **Control of Equipment Leaks from Synthetic Organic Chemical and Polymer Manufacturing Plants (4/14/88)**
- **Control of Emissions from Bakery Ovens (2/17/00)**
- **Control of Emissions From Offset Lithographic Printing Operations (2/17/00)**
- **Control of VOC Emissions from Traffic Coatings (2/17/00)**
- **Control of Emissions from Aluminum Foil Rolling (2/17/00)**
- **Control of Emissions from Solvent Cleanup Operations (2/17/00)**

# Cont.

- **Municipal Solid Waste Landfills (4/24/98)**
- **Control of Emissions From Volatile Organic Liquid Storage (5/18/2000)**
- **Control of Volatile Organic Compound Emissions From Existing Major Sources (5/18/2000)**
- **Control of Volatile Organic Compound Emissions From Wood Furniture Manufacturing Operations (5/18/00)**
- **Control of Emissions From Batch Process Operations (5/18/00)**
- **Control of Volatile Organic Compound Emissions From Reactor Processes and Distillations Operations Processes in the Synthetic Organic Chemical Manufacturing Industry (5/18/00)**



# Implementation Issues

- Rule signed on April 15, 2004
- St. Louis classified as “Moderate”
- RFG & I/M requirements same as 1-hour (Phase 2)
- RFP 3% per year (Phase 2) - VOC or NO<sub>x</sub>?
- RACT
- Full Blown attainment demonstration
- Attainment date for moderate areas - 6 years (April 15, 2010)
- 1-hour standard revoked on April 15, 2005.
- NSR transition
- Transportation Conformity transition.
- CAIR
- NO<sub>x</sub> SIP Call

# **Discussion/Questions**

# **Assignments**

